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EXAMINER	
MERED, HABTE	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/082,637	STONE ET AL.	
	Examiner	Art Unit	
	Habte Mered	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8 and 10-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8 and 10-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/4/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 6/22/2007 has been entered and fully considered.

2. Claims 1, 3-8, 10-43 are pending in the instant Application. Claims 2 and 9 have been previously cancelled. Claims 1, 8, 19, 29, 40 and 42 are the independent base claims.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1 and 40** are rejected under 35 U.S.C. 102(e) as being anticipated by Romans et al (US 6, 587, 453), hereinafter referred to as Romans.

Romans teaches a method of wirelessly transmitting isochronous and asynchronous data using contention free periods and contention periods.

3A. Regarding **claim 1**, Romans discloses a method of transmitting data within a network **(See Figure 2)** including one or more of a first type of device **(A Voice and Data Node on Figure 2)** operating according to a first protocol **(Isochronous traffic via TDMA protocol – see Column 2:27-29)** and a second protocol **(Asynchronous traffic via CSMA/CA protocol – see Column 2:30-36)** and one or more of a second type of device **(Figure 2, Voice Terminals)** operating according to only the second

protocol **(Isochronous traffic via TDMA protocol – see Column 2:27-29)** where devices of the first type and devices of the second type communicate with each other **(All nodes in Figures 2 and 3communicate with each other as illustrated in Columns 2:37-45)** comprising: a. establishing a periodic cycle including a first portion and a second portion **(See Figure 4 – Contention Period and Contention Free Period - Column 2:56-65)** ; b. allowing only transmissions according to the first protocol during the first portion **(Isochronous traffic via TDMA protocol during Contention Free Period - See Column 2:56-65)**; and c. allowing only transmissions according to the second protocol during the second portion **(Asynchronous traffic via CSMA/CA protocol- See Column 2:56-65)**, wherein the first protocol has priority over the second protocol. **(See Column 2:13-15, In the Contention Free Period Isochronous data has priority over Asynchronous data in that the transmission of Asynchronous data starts only after the complete transmission of Isochronous data. Further given a super frame that repeats periodically as shown on Column 3:30-31 the duration of the Contention Free Period where isochronous data is transmitted determines the length of the Contention Period where Asynchronous data is transmitted and effectively shows the priority given to Isochronous data)**

3B. Regarding **claim 40**, Romans discloses a method of transmitting data within a network **(See Figure 2)** including one or more of a first type of device **(A Voice and Data Node on Figure 2)** operating according to an isochronous protocol **(Isochronous traffic via TDMA protocol – see Column 2:27-29)** and an asynchronous protocol **(Asynchronous traffic via CSMA/CA protocol – see Column 2:30-36)** and one or

more of a second type of device **(Figure 2 – Data only Node)** operating according to only the asynchronous protocol **(Asynchronous traffic via CSMA/CA protocol- See Column 2:56-65)**, wherein devices of the first type and devices of the second type communicate with each other within the network **(All nodes in Figures 2 and 3communicate with each other as illustrated in Columns 2:37-45)**, comprising: a. establishing a periodic cycle including a first portion and a second portion **(See Figure 4 – Contention Period and Contention Free Period - Column 2:56-65)**; b. allowing only transmissions according to the isochronous protocol during the first portion**(Isochronous traffic via TDMA protocol during Contention Free Period - See Column 2:56-65)**; and c. allowing only transmissions according to the asynchronous protocol during the second portion**(Asynchronous traffic via CSMA/CA protocol- See Column 2:56-65)**, wherein the isochronous protocol has priority over the asynchronous protocol. **(See Column 2:13-15, In the Contention Free Period Isochronous data has priority over Asynchronous data in that the transmission of Asynchronous data starts only after the complete transmission of Isochronous data. Further given a super frame that repeats periodically as shown on Column 3:30-31 the duration of the Contention Free Period where isochronous data is transmitted determines the length of the Contention Period where Asynchronous data is transmitted and effectively shows the priority given to Isochronous data)**

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 3-5, and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer et al (US 6, 141, 355), hereinafter referred to as Palmer in view of Gulick (US 6, 651, 128).

Palmer discloses a system for providing efficient transmission of real time data and non-real time data between a plurality of network devices including an arbitration mechanism that provides a low cost and high performance mechanism of delivery of quality of service guarantees for time sensitive data sharing a local area with no-time-sensitive data.

3. Regarding **claim 1**, Palmer discloses a method of transmitting data within a network including one or more of a first type of device **(Figure 2, DA 2 (Device Adapter 2))** operating according to a first protocol **(Real-Time isochronous protocol because it supports element 200 RTD (Real Time Device). See also Column 1:20-32)** and a second protocol **(Non-Real Time Ethernet protocol because it supports element 100 NRTD (Non-Real Time Device))** and one or more of a second type of device **(Figure 2, DA 3 (Device Adapter 3))** operating according to only the second protocol **(Non-Real Time Ethernet protocol because it supports element 100 NRTD (Non-**

Real Time Device)) where devices of the first type and devices of the second type communicate with each other **(All DAs in Figures 2 and 6 communicate with each other as illustrated in Columns 7:10-25 and 9:20-32 and in Figure 5B)** comprising: a. establishing a periodic cycle including a first portion and a second portion **(See Column 4:55-67 and Column 7:10-25)** ; b. allowing only transmissions according to the first protocol during the first portion **(See Column 4:55-67)**; and c. allowing only transmissions according to the second protocol during the second portion**(See Column 4:55-67)**

Palmer fails to disclose the first protocol has priority over the second protocol.

Gulick discloses a method of arbitrating between asynchronous and isochronous data for access to data transport resources.

Gulick teaches the first protocol has priority over the second protocol. **(See Column 6:16-26 and 55-67)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Palmer's method to incorporate a method where the first protocol has priority over the second protocol. The motivation as stated by Gulick in Column 1:52-55 is that to have a system for arbitrating between asynchronous and isochronous data for access to transmission resources which maximizes a transfer rate of asynchronous data while maintaining a state of isochrony.

4. Regarding **claim 3**, Palmer discloses a method further comprising converting the transmission into a format understood by a receiving device. **(All the Device Adapters**

convert the isochronous and asynchronous input to Ethernet packets as shown in Figure 3)

5. Regarding **claim 4**, Palmer discloses a method wherein duration of the first portion is dependent on a number of active streams of the first protocol within the network. **(See Column 5:7-18 Palmer shows that the length of time allotted for the first protocol, i.e. isochronous, is dependent on the number of active streams which in turn depend on the isochronous channels established.)**

6. Regarding **claim 5**, Palmer discloses a method further comprising establishing an active stream of the first protocol **(i.e. isochronous)** within the network and guaranteeing first protocol bandwidth to the active stream. **(See Column 4:55-67; Column 5: 7-18; and Column 7:10-25))**

7. Regarding **claim 7**, Palmer discloses a method wherein the first protocol is isochronous **(isochronous/real-time/TDM see Column 1:23-32)** capable and the second protocol is asynchronous **(ETHERNET or CSMA/CD protocol which is asynchronous See Column 9:1-8)**.

8. **Claims 6 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer in view of Gulick as applied to claim 1, and further in view of Lo et al (US 6, 324, 178), hereinafter referred to as Lo.

The combination of Palmer and Gulick discloses all aspects of the claimed invention as set forth in the rejection of claim 1 including a second type of device operating according to Ethernet protocol **(See Palmer Figure 2 DA 3)** but fails to teach a method wherein the first type of device operates according to IEEE 1394 protocol.

Lo teaches a method of efficient data transfers between domains of differing data formats.

Lo discloses a method wherein the first type of device operates according to IEEE 1394 protocol. **(Lo clearly shows the bridge circuit connecting device based on IEEE 1394 to a device based on Ethernet protocol in Figure 4. See also Column 7, Lines 40-53)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Palmer's and Gulick's method to incorporate a first type of device that operates according to IEEE 1394 protocol. The motivation being IEEE 1394 protocol provides ability to support both isochronous data such as video and voice as well as asynchronous data making it easy to allow networking of different voice, video, audio, and data devices in home and small office networks. Lo further shows in Column 1, Lines 16-25 that in networked communication system the popular domains to be bridged are based on Ethernet and IEEE 1394 protocols.

9. **Claims 8 and 10-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Banks et al (US 6, 747, 979), hereinafter referred to as Banks, in view of Palmer et al (US 6, 141, 355), hereinafter referred to as Palmer, and Hewitt (US 6, 032, 211).

Banks discloses a network layer bridge.

10. Regarding **claim 8**, Banks discloses a modified hub device configured for coupling between two or more devices operating according to two or more different protocols **(See Column 10, Lines 35-45 – the network layer bridge is effectively a**

hub connecting devices in a LAN setting and the two different protocols are 802.3 LAN and IEEE 1394 LAN), the hub device **(Figure 5A, element 51)** wherein devices of the first type and devices of the second type communicate with each other **(See Column 13:40-67 and See Column 1, Lines 20-25 and Figure 5B)** comprising: a. a first interface configured for coupling to and communicating with one or more of a first type of device operating according to a first protocol and a second protocol **(Figure 5A, element 53 is an IEEE 1394 LAN as illustrated in Column 10, Line 44. As defined by the Standards Bodies and also confirmed by the Applicant – IEEE 1394 supports asynchronous and isochronous traffic. Clearly the Applicant is referring to the support for two different traffic types as constituting two different protocols)**; b. a second interface configured for coupling to and communicating with one or more of a second type of device operating according to only the second protocol **(Figure 5A, element 52 is 802.3 LAN as illustrated in Column 10, Line 43).**

Banks discloses bridges communicating with a router, which is a layer 3 switch, via a LAN segment as shown in Figure 6. Banks, however, fails to expressly disclose a bridge (i.e. hub) that is directly connected to and communicating with a switch device that sends periodic signal, which starts the start of a period having a first portion and second portion.

Palmer discloses a bridge **(In Figure 2, all Device Adapters act as a bridge)** with an interface configured for coupling to and communicating with the switching device **(Figure 2, element 4, x-hub switch, and Figure 4a)** that sends periodic signal, which starts the start of a period having a first portion and second portion **(Palmer**

shows a period having a first and second portion in Column 4:55-67 and to establish these cyclic periods Palmer shows use of signaling protocol between the hubs (i.e. DAs) and the switch (i.e. X-hub) in Column 7:5-10 and further given the signaling protocol it is inherent for the switch (i.e. X-hub) to send signals to the DAs to indicate the start of a phase or period.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate an interface configured for coupling to and communicating with the switching device. The motivation being the use of an Ethernet switch allows a particular LAN to connect and communicate with more than one different LAN as illustrated in Palmer's Column 3:57-67 and Column 4:19-32.

Banks fails to disclose a transmission scheme where periodic signals are sent to signal the start of a period having a first portion and a second portion, wherein only communications in the first protocol are allowed during the first portion and only communications in the second protocol are allowed during the second portion.

Hewitt teaches a method of prioritizing asynchronous and isochronous transfer over a bus connecting a first device and a second device.

Hewitt discloses a transmission scheme where periodic signals are sent to signal the start of a period having a first portion and a second portion, wherein only communications in the first protocol are allowed during the first portion and only communications in the second protocol are allowed during the second portion. **(Hewitt shows in Figure 4 a first portion of transmission where only Asynchronous traffic is handled and a second portion of transmission where only isochronous traffic**

is transmitted. See also Column 5, Lines 3-35. Hewitt further shows the various transmission cycles in Table 1 and the periodic signals sent to start the different cycles are shown in Table 2.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate a transmission scheme to handle asynchronous and isochronous traffic. The motivation being given that asynchronous and isochronous traffics are the main type of traffics handled in home and small office networks and having such a transmission scheme allows different devices to communicate in these types of networks efficiently with high QoS as can easily be inferred from Hewitt Column 1:33-50 and from Gulick (US 6, 651, 128) Column 1:24-50.

11. Regarding **claim 10**, Banks fails to disclose a modified hub device further comprising a conversion circuit coupled to the first interface, the second interface and the third interface for converting transmissions into a format understood by a receiving device.

Palmer discloses a modified hub device further comprising a conversion circuit coupled to the first interface **(Figure 3, element 1004)**, the second interface **(Figure 3, element 1006)** and the third interface **(Figure 3, element 1008)** for converting transmissions into a format understood by a receiving device. **(See Column 10:1-10)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's apparatus to incorporate a conversion circuit to format packets in a manner understood by receiving device. The motivation being such

an arrangement allows communication between different devices having different protocols.

12. Regarding **claim 11**, Banks fails to disclose a modified hub device wherein duration of the first portion is dependent on a number of active streams of the first protocol.

Hewitt discloses a modified hub device wherein duration of the first portion is dependent on a number of active streams of the first protocol. **(See Figure 4 and Column 5, Lines 3-35. Basically the first portion is Asynchronous traffic transmission and second portion is Isochronous traffic transmission.)**

13. Regarding **claim 12**, Banks discloses a modified hub device wherein the modified hub device communicates with the switching device **(i.e. layer 3 router – see Figure 6 and also Column 14, Lines 24-35)**

Banks fails to disclose a transmission scheme that establishes an active stream involving a device of the first type coupled to the hub device and further wherein appropriate bandwidth for the active stream is guaranteed when the active stream is established.

Hewitt discloses a transmission scheme that establishes an active stream involving a device of the first type coupled to the hub device and further wherein appropriate bandwidth for the active stream is guaranteed when the active stream is established. **(See Figure 4, step 407 and Column 5, Lines 3-35. Hewitt shows Isochronous streams are created when the bandwidth can be guaranteed.)**

14. Regarding **claim 13,** Banks discloses a modified hub device wherein the modified hub device communicates with the switching device **(i.e. layer 3 router – see Figure 6 and also Column 14, Lines 24-35)**

Banks fails to disclose a transmission scheme to establish an active stream involving a device of the first type coupled to the hub device and to assign a label corresponding to the active stream.

Hewitt discloses a transmission scheme that establishes an active stream involving a device of the first type coupled to the hub device and further wherein appropriate bandwidth for the active stream is guaranteed when the active stream is established. **(See Figure 4, step 407 and Column 5, Lines 3-35. Hewitt shows Isochronous streams are created when the bandwidth can be guaranteed. It is inherent for the system to mark the newly created streams with some form of identification or label)**

15. With respect to **claims 11-13**, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate a transmission scheme to handle asynchronous and isochronous traffic. The motivation being to provide voice and video services with high QoS one needs to handle asynchronous and isochronous transmission properly and minimize delay in isochronous transmission.

16. Regarding **claim 14**, Banks discloses a modified hub device wherein the first type of device operates according to IEEE 1394 protocol and the second type of device operates according to Ethernet protocol. **(Figure 5A, element 53 is an IEEE 1394 LAN**

as illustrated in Column 10, Line 44. Figure 5A, element 52 is 802.3 LAN as illustrated in Column 10, Line 43).

17. Regarding **claim 15**, Banks discloses a modified hub device wherein the first protocol is isochronous and the second protocol is asynchronous. **(Since Banks device supports IEEE 1394 protocol support for Asynchronous and Isochronous traffic based on IEEE standards is inherent.)**

18. Regarding **claim16**, Banks fails to disclose a modified hub device wherein communications from the first type of device in the second protocol are prioritized during the second portion over communications from the second type of device in the second protocol.

Hewitt discloses a transmission scheme involving communications from the first type of device in the second protocol are prioritized during the second portion over communications from the second type of device in the second protocol. **(The second protocol is IEEE 1394 and the devices operating under this protocol support different traffic types and definitely prioritization meeting this limitation is shown in Figure 4 in steps 407 and 411. See also Column 5, Lines 3-35)**

19. Regarding **claim 17**, Banks fails to disclose a modified hub device wherein communications from the second type of device in the second protocol are prioritized during the second portion over communications from the first type of device in the second protocol.

Hewitt discloses a transmission scheme involving communications from the second type of device in the second protocol are prioritized during the second portion

over communications from the first type of device in the second protocol. **(The second protocol is IEEE 1394 and the devices operating under this protocol support different traffic types and definitely prioritization meeting this limitation is shown in Figure 4 in steps 407 and 411. See also Column 5, Lines 3-35)**

20. With respect to ***claims 16 and 17***, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate a transmission scheme to handle asynchronous and isochronous traffic in terms of defining priority of transmission. The motivation for prioritization being isochronous traffic must be guaranteed a specific amount of bandwidth and worst case latency as illustrated by Hewitt further in Column 5, Lines 35-46.

21. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Banks in view of Palmer and Hewitt as applied to claim 8 above, and further in view of Thaler et al (US 6, 772, 267), hereinafter referred to as Thaler.

The combination of Banks, Palmer, and Hewitt teaches all aspects of the claimed invention as set forth in the rejection of claim 8 but does not disclose a modified hub device wherein the switching device is configured for coupling to a remote network of devices thereby providing a wide area network.

Thaler discloses a modified hub **(Figure 1, elements 100, and 112)** device wherein the switching device is configured for coupling to a remote network of devices thereby providing a wide area network **(Figure 1, element 108).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate an interface configured for

coupling to and communicating with a switching device configured for coupling to a remote network of devices. The motivation for coupling to remote network devices is to access the Internet and have the ultimate networking capability.

23. **Claims 19-25 and 29-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer et al (US 6, 141, 355), hereinafter referred to as Palmer, in view of Banks et al (US 6, 747, 979), hereinafter referred to as Banks and Gulick (US 6, 651, 128).

24. Regarding **claims 19 and 29**, Palmer discloses a switching device **(See Figure 2, element 4, Figure 4A, and Figure 5A, and Figure 6, element 6)** configured for coupling to two or more hub devices **(All the DAs in Figures 2 and 6 are hubs).** Palmer further discloses the switching device comprising: a plurality of ports **(Figure 4A shows 8 inputs and corresponding Figure 4B shows 8 DAs (i.e. hubs) and Column 11: 43-50 illustrates that each port is coupled to a corresponding DA or Hub)**, each port coupled to a corresponding hub device for interfacing with devices coupled to the corresponding hub device; and b. a control circuit coupled to the plurality of ports **(See Figures 4A, elements 45).** Palmer also discloses a transmission scheme where periodic signals are sent to signal the start of a period having a first portion and a second portion, wherein only communications in the first protocol are allowed during the first portion and only communications in the second protocol are allowed during the second portion. **(Palmer shows a period having a first and second portion in Column 4:55-67 and to establish these cyclic periods Palmer shows use of signaling protocol between the hubs (i.e. DAs) and the switch (i.e. X-hub) in**

Column 7:5-10 and further given the signaling protocol it is inherent for the switch (i.e. X-hub) to send signals to the DAs to indicate the start of a phase or period.)

Palmer fails to disclose hub devices providing interfaces to one or more of a first type of device operating according to a first protocol and a second protocol and one or more of a second type of device operating according to only the second protocol.

Banks discloses hub devices **(Figure 5A, element 51)** providing interfaces to one or more of a first type of device operating according to a first protocol **(Figure 5A, element 53 is an IEEE 1394 LAN as illustrated in Column 10, Line 44. As defined by the Standards Bodies and also confirmed by the Applicant – IEEE 1394 supports asynchronous and isochronous traffic. Clearly the Applicant is referring to the support for two different traffic types as constituting two different protocols)**; and a second protocol and one or more of a second type of device operating according to only the second protocol **(Figure 5A, element 52 is 802.3 LAN as illustrated in Column 10, Line 43. See Column 10, Lines 35-45 – the network layer bridge is effectively a hub connecting devices in a LAN setting)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Palmer's switching device by incorporating Bank's' bridge/hub device. The motivation being Bank's network layer bridge that acts as a hub for interconnecting 1394 LAN to Ethernet LAN facilitates multimedia data exchange in different formats.

Palmer fails to disclose the first protocol has priority over the second protocol.

Gulick discloses a method of arbitrating between asynchronous and isochronous data for access to data transport resources.

Gulick teaches the first protocol has priority over the second protocol. **(See Column 6:16-26 and 55-67)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Palmer's method to incorporate a method where the first protocol has priority over the second protocol. The motivation as stated by Gulick in Column 1:52-55 is that to have a system for arbitrating between asynchronous and isochronous data for access to transmission resources which maximizes a transfer rate of asynchronous data while maintaining a state of isochrony.

25. Regarding **claims 20 and 30**, Palmer discloses a switching device with hubs and end devices. Palmer, however, fails to disclose wherein devices of the first type and devices of the second type communicate with each other.

Banks discloses devices of the first type and devices of the second type communicate with each other. **(Banks discloses a modified hub device (Figure 5A, element 51) wherein devices of the first type (Figure 5A, element 53 is an IEEE 1394 LAN as illustrated in Column 10, Line 444) and devices of the second type (Figure 5A, element 52 is 802.3 LAN as illustrated in Column 10, Line 43) communicate with each other (See Column 1, Lines 20-25 and Figure 5B).)**

26. Regarding **claims 24 and 35**, Palmer discloses a switching device with hubs and end devices. Palmer, however, fails to disclose wherein the first type of device operates

according to IEEE 1394 protocol and the second type of device operates according to Ethernet protocol.

Banks discloses the first type of device operates according to IEEE 1394 protocol and the second type of device operates according to Ethernet protocol. **(Figure 5A, element 53 is an IEEE 1394 LAN as illustrated in Column 10, Line 44. Figure 5A, element 52 is 802.3 LAN as illustrated in Column 10, Line 43).**

27. Regarding **claims 25 and 36**, Palmer discloses a switching device with hubs and end devices. Palmer, however, fails to disclose wherein the first protocol is isochronous capable and the second protocol is asynchronous.

Banks discloses the first protocol is isochronous capable and the second protocol is asynchronous. **(Since Banks device supports IEEE 1394 protocol support for Asynchronous and Isochronous traffic based on IEEE standards is inherent.)**

28. With respect to ***claims 20, 24, 25, 30, 35 and 36***, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Palmer's switching device by modifying the DAs (i.e. hubs) and incorporating Bank's' bridge with a capability to bridge 1394 LAN to Ethernet LAN. The motivation being using Bank's network layer bridge as a hub for interconnecting 1394 LAN to Ethernet LAN tremendously facilitates multimedia data exchange and communication.

29. Regarding **claim 31**, Palmer discloses a modified hub device further comprising a conversion circuit coupled to the first interface **(Figure 3, element 1004)**, the second interface **(Figure 3, element 1006)** and the third interface **(Figure 3, element 1008)** for

converting transmissions into a format understood by a receiving device. **(See Column 10:1-10)**

30. Regarding **claims 21 and 32**, Palmer discloses a switching device, wherein duration of the first portion is dependent on a number of active streams of the first protocol. **(See Column 5:7-18 Palmer shows that the length of time allotted for the first protocol, i.e. isochronous, is dependent on the number of active streams which in turn depend on the isochronous channels established.)**

31. Regarding **claims 22 and 33**, Palmer discloses a switching device that communicates with the hub devices. **(See Column 4, Lines 54-67)** Palmer discloses a transmission scheme that establishes an active stream involving a device of the first type coupled to the hub device and further wherein appropriate bandwidth for the active stream is guaranteed when the active stream is established. **(See Column 4:55-67; Column 5: 7-18; and Column 7:10-25))**

32. Regarding **claims 23 and 34**, Palmer discloses a switching device that communicates with the hub devices. **(See Column 4, Lines 54-67)**. Palmer discloses a transmission scheme that establishes an active stream involving a device of the first type coupled to the hub device and to assign a label corresponding to the active stream. **(See Column 4:55-67; Column 5: 7-18; and Column 7:10-25. Isochronous streams are created when the bandwidth can be guaranteed. It is inherent for the system to mark the newly created streams with some form of identification or label)**

33. **Claim 26, 27, 37, and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer in view of Banks as applied to claims 19 and 29 above, and further in view of Hewitt (US 6, 032, 211).

34. Regarding **claims 26 and 37**, the combination of Palmer and Banks discloses a switching device. The combination of Palmer and Banks fails to disclose wherein communications from the first type of device in the second protocol are prioritized during the second portion over communications from the second type of device in the second protocol.

Hewitt discloses a transmission scheme involving communications from the first type of device in the second protocol are prioritized during the second portion over communications from the second type of device in the second protocol. **(The second protocol is IEEE 1394 and the devices operating under this protocol support different traffic types and definitely prioritization meeting this limitation is shown in Figure 4 in steps 407 and 411. See also Column 5, Lines 3-35)**

35. Regarding **claims 27 and 38**, the combination of Palmer and Banks fails to disclose a switching device wherein communications from the second type of device in the second protocol are prioritized during the second portion over communications from the first type of device in the second protocol.

Hewitt discloses a transmission scheme involving communications from the second type of device in the second protocol are prioritized during the second portion over communications from the first type of device in the second protocol. **(The second protocol is IEEE 1394 and the devices operating under this protocol support**

different traffic types and definitely prioritization meeting this limitation is shown in Figure 4 in steps 407 and 411. See also Column 5, Lines 3-35)

36. With respect to ***claims 26, 27, 37 and 38***, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Palmer's and Banks switching device to incorporate a transmission scheme to handle asynchronous and isochronous traffic in terms of defining priority of transmission. The motivation being such a prioritization scheme ensures voice and video services are delivered with high QoS by minimizing delay in isochronous transmission.

37. **Claims 28 and 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer in view of Banks as applied to claims 19 and 29 respectively above, and further in view of Thaler et al (US 6, 772, 267), hereinafter referred to as Thaler.

The combination of Banks and Palmer teaches all aspects of the claimed invention as set forth in the rejection of claims 19 and 29 but does not disclose a modified hub device wherein the switching device is configured for coupling to a remote network of devices thereby providing a wide area network.

Thaler discloses a modified hub **(Figure 1, elements 100, and 112)** device wherein the switching device is configured for coupling to a remote network of devices thereby providing a wide area network **(Figure 1, element 108).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bank's' bridge to incorporate an interface configured for coupling to and communicating with a switching device configured for coupling to a

remote network of devices. The motivation for coupling to remote network devices is to access the Internet and have the ultimate networking capability.

38. **Claims 8 and 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heil (US 5450411) in view of Brown (US Pub. 2004/0019731 A1)

Heil discloses network interface for multiplexing and demultiplexing isochronous and bursty data streams in ATM networks.

39. Regarding **claim 8**, Heil also discloses a modified hub device **(Figure 2, element 22 – ATM network interface)** configured for coupling between two or more devices **(Figures 1...M are processors that can reside in a different devices)** operating according to two or more different protocols **(As indicated in Figure 3 each processor either based on isochronous protocol or non-isochronous protocol)** and a switching device **(Figs. 1&3 – element 24 – ATM switch device)**, wherein devices of the first type and devices of the second type communicate with each other, the hub device comprising:

a. a first interface **(Figure 2, element 22 – talking to a device that has both types of processors as shown in Figure 5)** configured for coupling to and communicating with one or more of a first type of device operating according to a first protocol and a second protocol **(A given device can have two type of processors as shown in Figure 5 and hence using both isochronous and non-isochronous protocol)**;

b. a second interface **(Figure 2, element 22 – talking to a device that has a one type of processor based on either isochronous or non-isochronous)** configured for coupling to and communicating with one or more of a second type of device operating

according to only the second protocol **(A given device can have one type of processor as shown in Figure 3 and hence using either isochronous or non-isochronous protocol)**; and

c. a third interface configured for coupling to and communicating with the switching device **(See interface between elements 22 and 24 in Figure 3)**.

Heil fails to disclose a transmission scheme where periodic signals are sent to signal the start of a period having a first portion and a second portion, wherein only communications in the first protocol are allowed during the first portion and only communications in the second protocol are allowed during the second portion.

Brown teaches a method of prioritizing asynchronous and isochronous transfer over a bus connecting a first device and a second device.

Brown discloses a transmission scheme where periodic signals are sent to signal the start of a period having a first portion and a second portion, wherein only communications in the first protocol are allowed during the first portion and only communications in the second protocol are allowed during the second portion. **(See Figures 5 and 6)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Heil's' bridge to incorporate a transmission scheme to handle asynchronous (i.e. non-isochronous) and isochronous traffic. The motivation to incorporate a transmission scheme to handle asynchronous and isochronous traffic is to minimize asynchronous latency while maintaining an acceptable latency level for isochronous transactions as further illustrated by Brown in paragraph 35.

39. Regarding **claim 42**, Brown discloses a network of devices **(See Figure 2)** comprising: a. a switching device **(Figure 3 – element 24 atm switch))** including: I. a plurality of ports **(all atm switches have ports)**; and II. a control circuit coupled to the plurality of ports **(some form of control switching circuit has to be interfaced to the ports)** and b. a plurality of modified hub devices **(Figure 3 element 22 – ATM network interface)** each including: i. a first interface configured for coupling to and communicating with one or more of a first type of device operating according to the isochronous protocol and the asynchronous protocol **(A given device can have two type of processors as shown in Figure 5 and hence using both isochronous and non-isochronous protocol)**;

ii. a second interface configured for coupling to and communicating with one or more of a second type of device operating according to only the asynchronous protocol**(A given device can have one type of processor as shown in Figure 3 and hence using either isochronous or non-isochronous protocol)**; and

iii. a third interface coupled to a corresponding one of the plurality of ports **(See interface between elements 22 and 24 in Figure 3)**.

Heil fails to disclose sending a periodic signal which signals the start of a period having a first portion and a second portion, wherein only communications in an isochronous protocol are allowed during the first portion and only communications in an asynchronous protocol are allowed during the second portion; wherein the isochronous protocol has priority over the asynchronous protocol.

Brown discloses sending a periodic signal which signals the start of a period having a first portion and a second portion **(Figure 5 step 502 and Figure 6 step 602)**, wherein only communications in an isochronous protocol are allowed during the first portion **(Figure 5, step 512 and Figure 6 step 614)** and only communications in an asynchronous protocol are allowed during the second portion **(Figure 5 step 508 and Figure 6 step 608)**; wherein the isochronous protocol has priority over the asynchronous protocol**. (in a given new frame always isochronous data is handled first)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Heil's' bridge to incorporate a transmission scheme to handle asynchronous (i.e. non-isochronous) and isochronous traffic. The motivation to incorporate a transmission scheme to handle asynchronous and isochronous traffic is to minimize asynchronous latency while maintaining an acceptable latency level for isochronous transactions as further illustrated by Brown in paragraph 35.

40. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Heil in view of Brown as applied to claim 42, and further in view of Lo et al (US 6, 324, 178), hereinafter referred to as Lo.

The combination of Heil and Brown discloses all aspects of the claimed invention as set forth in the rejection of claim 42 including a second type of device operating according to Ethernet protocol **(See Palmer Figure 2 DA 3)** but fails to teach a method wherein the first type of device operates according to IEEE 1394 protocol.

Lo teaches a method of efficient data transfers between domains of differing data formats.

Lo discloses a method wherein the first type of device operates according to IEEE 1394 protocol. **(Lo clearly shows the bridge circuit connecting device based on IEEE 1394 to a device based on Ethernet protocol in Figure 4. See also Column 7, Lines 40-53)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Heil's and Brown's method to incorporate a first type of device that operates according to IEEE 1394 protocol. The motivation being IEEE 1394 protocol provides ability to support both isochronous data such as video and voice as well as asynchronous data making it easy to allow networking of different voice, video, audio, and data devices in home and small office networks. Lo further shows in Column 1, Lines 16-25 that in networked communication system the popular domains to be bridged are based on Ethernet and IEEE 1394 protocols.

Response to Arguments

41. Applicant's arguments filed on 6/22/2007 have been fully considered but they are not persuasive.

42. In the Remarks, on page 11 in the first paragraph, Applicant argues that Romans fails to teach a 2nd type of device operating according to only the second protocol. Applicant cites the previous Office Action rejection for claim 1 is erroneous in that if

Examiner maintains the second device, which is a Voice Terminal, is based on isochronous protocol then the voice terminal is not operating according to the second protocol (CSMA/CA).

Examiner respectfully disagrees and directs Applicant to Romans Figure 2. In claim 1 there is nothing requiring the second protocol to be asynchronous protocol. As claimed the second protocol can be any thing including isochronous protocol. All claim 1 is requiring a first device supporting protocols A and B and a second device supporting protocol B. Romans Figure 2 adequately meets limitations of claim 1 and newly added claim 40 in that the device at the Voice and data node supports both protocols (iso and asynch) and voice terminal supports only isochronous protocol and the device at the data only node supports asynchronous protocol and the limitation on the priority scheme is also addressed by Romans adequately. Therefore the 102 rejection of claim 1 is maintained.

43. In the Remarks, on page 12, Applicant argues that Gulick fails to teach that the first protocol has priority over the second protocol with respect to the 103 rejection of claim 1.

Examiner respectfully disagrees. Applicant is merely suggesting Gulick fails to teach the claimed limitation in claim 1 without explaining why Gulick fails to do so. Clearly Gulick in Column 6:16-26 and 56-67 adequately teaches the claimed priority scheme.

44. In the Remarks, on pages 14 and 16, with respect to claim 8, Applicant argues that there is no motivation to combine Banks, Palmer, and Hewitt and is based upon improper hindsight reasoning. Examiner respectfully disagrees.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Examiner points out to the Applicant that the sources of all motivations are cited in the 103 rejection of claim 8 and the citations are from the prior arts used in these rejections including Palmer and Hewitt.

40. In the Remarks, on pages 17 and 18, with respect to claim 8, Applicant argues Hewitt teaches a transmission scheme to handle asynchronous and isochronous traffic in a personal computer and never discusses any thing related to networking. Examiner respectfully disagrees.

It is clearly established that Hewitt teaches a transmission scheme to handle asynchronous and isochronous traffic in a personal computer and the Applicant does not contest this fact. However, Hewitt clearly shows that the personal computer exchanges or receives and transmits asynchronous and isochronous traffic in a network environment as can clearly be deduced from the description in Column 3:28-36 and hence Hewitt's teaching is applicable to a network that interfaces with a PC.

41. In the Remarks, on page 12, with respect to claim 8, Applicant argues that neither Banks, Palmer, Hewitt nor their combination teach the claimed third interface to the switching device. Examiner respectfully disagrees.

The rejection of claim 8 clearly teaches that Palmer in Figures 2 and 6 teaches a hub or bridge in the form of a Device Adapter with a third interface (Network Connection Point 2 of Figures 2 and 6) going to a switch (Element 4 of Figures 2 and 6). Applicant has not provided any explanation or citation to indicate how Palmer fails to teach a hub/bridge with a third interface to a switch.

42. In Conclusion Examiner wants to bring to the attention of the Applicant that Romans, Hewitt, and Brown all suggest and teach all of the claimed priority schemes.

Conclusion

43. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following US Patent is cited to show the state of the art with IEEE 1394/Ethernet Protocol conversion:

US Patent (6, 813, 651) to Smith et al

The following US Patents are cited to show the state of the art with respect to ISOCHRONOUS/ASYNCHRONUS transmission schemes:

US Patent (6, 339, 584) to Gross et al

US Patent (6, 381, 647) to Darnell et al

US Patent (6, 011, 784) to Brown et al

The following US Patent is cited to show the state of the art with Ethernet Switching technology:

US Patent (6, 577, 631) to Keenan et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H. To can be reached on 571 272 7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HM
02-13-2007

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